WE CLAIM:

1. A demodulator comprising:

means for receiving modulated signals, defining received signals

means for determining the distance of said received signals relative to predetermined decision boundaries;

means for adjusting said predetermined boundaries as a function of said distance, defining adjusted decision boundaries; and

means for decoding said signals relative to said adjusted boundaries.

2. The demodulator as recited in claim 1, wherein said adjusting means includes means for mapping said adjusted boundaries to a decision map.

3. The demodulator as recited in claim 1, further including a symbol error counter for comparing said divided signals to a predetermined training sequence to further improve the bit error rate.

4. The demodulator as recited in claim 1, wherein said adjusting means includes means for dithering the location of said decision boundaries while said bit error rate (BER) is measured and selecting the location of the decision boundary which the BER is minimal.

5. A demodulator comprising:

means for receiving modulated signals, defining received signals;

means for determining the distance between said received signals and a reference constellation;

means for adjusting the location of said reference constellation as a function of said distance defining an adjusted reference constellation; and

means for decoding said signals relative to said adjusted reference constellation.

6. The demodulator as recited in claim 5, wherein said adjusting means includes means for mapping said adjusted reference constellation to a memory map.

7. The demodulator as recited in claim 5, further including a symbol error counter for comparing said decoded signals to a predetermined training sequence to further improve the bit error rate.

8. The demodulator as recited in claim 5, wherein said adjusting means includes means for dithering each point in said reference constellation while said bit error rate and selecting a location for said reference constellation in which the bit error rate is minimal.

9. The demodulator as recited in claim 8, wherein said dithering means includes means for dithering said points of said reference constellation in one or the other of a horizontal or vertical direction.

10. The demodulator as recited in claim 8, wherein said dithering means includes means for dithering said points in said reference constellation in both said horizontal and said vertical direction.

11. A method for demodulating a signal comprising the steps of:

(a) receiving modulated signals defining received signals

(b) determining the distance of said received signals relative to predetermined decision boundaries;

(c) adjusting said predetermined boundaries as a function of said distance defining adjusted decision boundaries; and

(d) decoding said signals relative to said adjusted boundaries.

12. A method for demodulating a signal as recited in claim 11, wherein said adjusting step includes the step of mapping said adjusted boundaries

to a decision map.

13. A method for demodulating a signal as recited in claim 11, further including the steps of providing a symbol error counter and comparing said divided signals to a predetermined training sequence to further improve the bit error rate.

14. A method for demodulating a signal as recited in claim 11, wherein said adjusting step comprises the steps of dithering the location of said decision boundaries while said bit error rate (BER) is measured and selecting the location of the decision boundary which the BER is minimal.

15. A method for demodulating a signal comprising the steps of:

(a) receiving modulated signals, defining received signals;

(b) determining the distance between said received signals and a reference constellation;

(c) adjusting the location of said reference constellation is a function of said distance defining an adjusted reference constellation; and

(d) decoding said signals to said adjusted reference constellation.

16. A method for demodulating a signal as recited in claim 15, wherein said adjusting step includes the step of mapping said adjusted reference constellation to a memory map.

17. A method for demodulating a signal as recited in claim 15, further including the steps of providing a symbol error counter for comparing said decoded signals to a predetermined training sequence to further improve the bit error rate.

18. A method for demodulating a signal as recited in claim 15, wherein said adjusting step includes the steps of dithering each point in said

reference constellation while said bit error rate and selecting a location for said reference constellation in which the bit error rate is minimal.

19. A method for demodulating a signal as recited in claim 15, wherein said dithering step comprises dithering said points of said reference constellation in one or the other of a horizontal or vertical direction.

20. A method for demodulating a signal as recited in claim 15, wherein said dithering step comprises dithering said points in said reference constellation in both said horizontal and said vertical direction.